

Listing of the Claims

1. (Currently Amended) A method for creating a sequence of image frames, the method comprising:

5 generating a plurality of colors of light having a color sequence that ~~periodically varies with a varying color time period with respect to a~~ characteristic sequential color time period;

modulating the plurality of colors of light sequentially to provide a plurality of sequential sub-frame images for each of the image frames;

10 projecting the plurality of sub-frame images during a projected frame period for each of the image frames ~~during a frame~~ the varying color time period;

for each image frame, each of the sub-frame images projected displaced relative to ~~each other~~ sub-frame images of a prior image frame by less than 1 pixel; and

15 synchronizing ~~the periodic variation of the plurality of colors of light and the projection of the plurality of sub-frame images to~~ the varying color time period to assure an integer relationship between the varying color time period and the projected frame period.

20 2. (Original) The method of claim 1 wherein generating the plurality of colors of light comprises passing a beam of light through a rotating color filter wheel.

25 3. (Currently Amended) The method of claim 2 wherein the filter wheel rotates with a period that is an integer multiple of the varying color time period.

4. (Currently Amended) The method of claim 1 wherein synchronizing the periodic variation of the plurality of colors of light and projection of the plurality of sub-frame images comprises:

30 discovering the varying color time period and

synchronizing the projected frame period to an integer relationship with the varying color time period.

5. (Currently Amended) The method of claim 4 wherein discovering the varying color time period includes tracking a sequential color device.

6. (Currently Amended) The method of claim 4 wherein discovering the varying color time period includes monitoring a color time period set point of a sequential color device.

7. (Currently Amended) The method of claim 1 wherein the integer relationship between the varying color time period and the projected frame period includes the varying color time period equal to the projected frame period.

8. (Currently Amended) The method of claim 1 wherein the integer relationship between the varying color time period and the projected frame period includes the varying color time period equal to the inverse of an integer multiple of the projected frame period.

9. (Currently Amended) The method of claim 1 wherein the integer relationship between the varying color time period and the projected frame period includes the varying color time period equal to an integer multiple of the projected frame period.

10. (Currently Amended) A display system for creating a sequence of image frames, the display system comprising:

a spatial light modulator configured to modulate light to provide a plurality of sub-frame images for each of the image frames during a projected frame period;

a periodic light generator configured to generate a plurality of colors of light for each of the plurality of sub-frame images having a color sequence with a varying color time period ~~that periodically varies with respect to~~ a characteristic sequential color time period, the periodic light generator disposed to pass the plurality of colors of light across the spatial light modulator;

a periodic wobbling device configured to provide a relative displacement of the sub-frame images by less than one pixel for each varying color time period for each image frame; and

a system timing unit configured to synchronize the projected frame period to the periodic light generator and the periodic wobbling device to assure an integer relationship between the varying color time period and the projected frame period.

11. (Original) The display system of claim 10 wherein the periodic light generator comprises:

a sequential color device and

a light source color modulated by the sequential color device.

12. (Currently Amended) The display system of claim 11 wherein the sequential color device comprises a rotating color filter wheel, the rotating color filter wheel having a time period of rotation that is an integer multiple of the ~~characteristic sequential~~ varying color time period.

13. (Original) The display system of claim 12 wherein the integer multiple is one and the rotating color filter wheel has a single set of primary color filter elements.

14. (Original) The display system of claim 12 wherein the integer is greater than one and the rotating color filter wheel has a quantity of sets of primary color filter elements equal to the integer.

5 15. (Currently Amended) The display system of claim 10 wherein the varying color time period equals the projected frame period.

10 16. (Currently Amended) The display system of claim 10 wherein the varying color time period equals the inverse of an integer multiple of the projected frame period.

17. (Currently Amended) The display system of claim 10 wherein the varying color time period equals an integer multiple of the projected frame period.

15 18. (Currently Amended) A display system for creating a sequence of image frames, the display system comprising:

means for modulating light to provide a plurality of sub-frame images for each of the image frames during a projected frame period;

20 means for generating a plurality of colors of light having a sequential color sequence for each of the plurality of sub-frame images having a varying color time period ~~that periodically varies with respect to~~ a characteristic sequential color time period and passing the plurality of colors of light to the means for modulating light;

25 means for displacing the sub-frame images of each image frame relative to each other sub-frame image of the same image frame by less than one pixel; and

means for synchronizing ~~the means for generating and the means for displacing to~~ the means for generating to assure an integer relationship between the varying color time period and the projected frame period.

30 19. (Original) The display system of claim 18 wherein the means for generating a plurality of colors of light comprises:

a sequential color device and

a light source color modulated by the sequential color device.

20. (Currently Amended) The display system of claim 19 wherein the sequential color device comprises a rotating color filter wheel, the rotating color filter wheel having a time period of rotation that is an integer multiple of the ~~characteristic sequential~~varying color time period.

21. (Original) The display system of claim 19 wherein the integer multiple is one and the rotating color filter wheel has a single set of primary color filter elements.

22. (Original) The display system of claim 19 wherein the integer multiple is greater than one and the rotating color filter wheel has a quantity of sets of primary color filter elements equal to the integer.

23. (Currently Amended) The display system of claim 18 wherein the varying color time period equals the projected frame period.

24. (Currently Amended) The display system of claim 18 wherein the varying color time period equals the inverse of an integer multiple of the projected frame period.

25. (Currently Amended) The display system of claim 18 wherein the varying color time period equals an integer multiple of the projected frame period.

Claims 26-29 (Cancelled)

30. (Currently Amended) A display system comprising:

an image processing unit configured to generate at least two data arrays during a projected frame period, each data array defining a sub-frame image to be displayed during an image sub-frame time period;

a periodic color light generator having a varying color light period and configured to generate a sequence of primary colors during each of at least two of the image sub-frame time periods;

a light modulator configured to receive light from the periodic light generator and to generate a modulated light beam during each image sub-frame time period;~~and~~

a wobbling device configured to receive the modulated light beam and provide relative displacement between the sub-frame images during the projected frame period; and

a system timing unit configured to synchronize the wobbling device to the varying color light period to allow the projected frame period to be an integer multiple of the varying color light period.

Claim 31 (Cancelled).

32. (Original) The system of claim 30 wherein the light modulator is further configured to modulate the light beam based upon each of the image sub-frame data arrays.

33. (Original) The system of claim 30 wherein the periodic light generator includes a color filter wheel.

34. (New) An image processing unit configured to generate a frame image on a viewing surface during a projected frame period, the image processing unit comprising:

5 a) a frame generation unit configured to send control signals to a spatial light modulator during the projected frame period, the projected frame period having at least a first sub-frame time period and a second sub-frame time period to define:

a first sub-frame image on the viewing surface during the first sub-frame time period, and

10 a second sub-frame image on the viewing surface during the second sub-frame time period; and

b) a system timing unit configured to:

15 monitor the position of a color wheel having a varying color light period, the color wheel optically coupled to illuminate the spatial light modulator with a first sequence of colors during the first sub-frame period and with a second sequence of colors during the second sub-frame period,

synchronize the projected frame period to the varying color light period, and

20 synchronize a wobbling device to the varying color light period, the wobbling device configured to provide a relative spatial displacement between the first sub-frame image and the second sub-frame image.

35. (New) An image processing unit, comprising:

means to determine the position of a color wheel having a first varying color light period as the color wheel illuminates a spatial light modulator with a first sequence of colors during a first sub-frame time period and to determine the position of the color wheel having a second varying color light period as the color wheel illuminate the spatial light modulator with a second sequence of colors during a second sub-frame time period;

means to receive image data and create a first sub-frame image and a second sub-frame image based on the position of the color wheel;

means to send control signals to the spatial light modulator during the first sub-frame time period to define the first sub-frame image on a viewing surface and the second sub-frame time period to define the second sub-frame image on the viewing surface; and

means to send control signals to a wobbling device to provide a relative displacement between the first sub-frame image and the second sub-frame image.

36. (New) The image processing unit of claim 35 further comprising means to synchronize the relative displacement with respect to the first and second varying color light periods.